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ORIGINAL PAPER

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The relationship between socio-economic inequality and criminal victimisation: a prospective study

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Abstract *Background:* This study investigates the relationship of socio-economic inequality (SEI) with criminal victimisation. It is hypothesised that disadvantage in terms of SEI is associated with increased risk of being victimised and with increased distress following victimisation. Two concepts of SEI are applied: social class (measured in terms of relation to work) and SES (measured in terms of education). *Method:* A representative sample of the Dutch population, comprising 3446 individuals, was followed up and incident crime victims were identified ($n=179$). A matched comparison group was recruited from the same sample ($n=266$). SEI and potential vulnerability measures were taken at baseline. Distress was measured 1 week following victimisation and at 1-month intervals for the following consecutive 3 months. *Results:* The probability of becoming victimised was significantly higher among the unemployed and (unexpectedly) among persons with higher education. The unemployed also showed an increased vulnerability for distress following victimisation compared to all other class categories. This increased vulnerability could not be explained by differences in style of information processing, locus of control, hardiness, need for affiliation, or social support. *Conclusion:* The limitations of the study are discussed and recommendations with respect to the special attention required for unemployed persons are offered.

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Introduction

The relationship between stressful life events and psychological distress has been the focus of many studies (e.g. Brown and Harris 1989; Dohrenwend and Dohrenwend 1974; Kessler 1997). A different body of literature focuses on a related phenomenon: the relationship between trauma and post-traumatic stress disorder (e.g. Green 1994; Kessler et al. 1995; McFarlane 1989).

Socio-economic inequality (SEI) plays a central role, as a vulnerability factor, in the stress-distress literature. In addition to experiencing more stressful life events, persons of lower SEI are more vulnerable to the effects of such events (Brown and Harris 1978; Langner and Michael 1963).

In contrast to the centrality of SEI in the stress literature, SEI has received only limited attention in the trauma literature [Shalev, (1996) has commented on the lack of interaction between the two fields of research]. The victimisation literature does not pay extensive attention to this issue either, although some publications from the British Crime Survey focus on social disadvantage as a risk factor for repeat victimisation (Tseloni et al. 1994) and for fear of crime (Pantazis 2000). Identifying factors that predict distress in individuals who experience stressful or traumatic experiences can be of importance, since it is known that distress resulting from such experiences can become chronic and debilitating (Breslau et al. 1997; Shalev et al. 1996; Solomon and Davidson 1997). Early detection and treatment is, therefore, a desirable aim (Solomon and Benbenishti 1986). Conversely, it also seems useful to identify those individuals and situations who can be expected to experience spontaneous recovery without undue interventions. The purpose of this paper is therefore to examine the role of SEI in the occurrence of victimisation and in the consequently ensuing distress.

An important issue in the examination of the relationship between SEI and criminal victimisation is the nature of the concept of SEI. Although SEI has been

measured by an array of different indices, these indices can be grouped as emanating from one of two different theoretical concepts (Wohlfarth 1997). The one concept, commonly labelled as socio-economic status or SES, invokes those aspects of socio-economic inequalities that are related to the unequal distribution of socially valued commodities, such as income, prestige or education. The empirical measures that are derived from the SES conceptualisation of SEI are usually continuous: possessing more or less of the socially valued commodity. The second concept, labelled as social class, invokes those aspects of socio-economic inequality that are related to power or control over production in the work place. The empirical measure that is associated with the social class conceptualisation of SEI is categorical. Four criteria are used in defining social classes (Wright 1979): being an employee or self-employed, control over labour power, control over decisions in the workplace, and control over one's own work. Based on these criteria, seven social classes can be defined. According to this concept, those outside the paid labour force are placed in a separate category. It has been shown that the empirical measures derived from the two different concepts are empirically not interchangeable, and that they explain different parts of the variance associated with psychiatric disorders. It has been, furthermore, suggested that different pathways are responsible for the relationship between the two types of measures and substance use disorders (Wohlfarth and van den Brink 1998). Therefore, we shall apply both types of SEI measures in this paper.

SEI is hypothesised to play a central role in the occurrence of criminal victimisation and in the consequently ensuing distress. The risk of being victimised is expected to be higher among persons who are disadvantaged in terms of SEI, since disadvantage is associated with living in neighbourhoods with high criminality. Furthermore, persons who are disadvantaged in terms of SEI are less likely to have the resources that may enable them to protect themselves against criminality (e.g. good locks on front doors, taking taxis when travelling late at night or in dangerous areas). Persons who are disadvantaged in terms of SEI are also expected to display higher levels of distress. This relationship has been long documented (for a review see Kohn et al. 1998), and is partly the result of previous life events (e.g. criminal victimisation) and long-term difficulties (e.g. unemployment). In addition, persons who are disadvantaged in terms of SEI are expected to be more vulnerable to the negative effects of criminal victimisation. This increased vulnerability may be due to a decreased availability, among persons who are disadvantaged in terms of SEI, of coping resources (e.g. internal coping resources like hardiness and external coping resources like social support, money, etc.).

In fact, two models are suggested here: the first explains victimisation risk while the second explains distress following victimisation. The main hypothesis of the first model is that SEI is directly related to the risk of

victimisation. In addition, the model suggests that SEI is directly related to satisfaction with life and to prior life stress. These relationships have been demonstrated earlier (e.g. Kohn et al. 1998; Langner and Michael 1963). The role that SEI plays in these factors can produce apparent relationships between them. The model suggests that once SEI is controlled for, these relationships will disappear. Hence, the concentration of victimisation experiences among individuals who show low satisfaction with life and who have previously experienced other negative events is not necessarily due to "victimisation proneness". Rather, disadvantage in terms of SEI, which is directly associated with decreased satisfaction with life, increased risk of prior life stress and of being victimised, may explain the concentration of criminal victimisation in some individuals. This hypothesis is offered in response to some recent reports in the trauma literature demonstrating that traumatic events are not merely chance occurrences that are distributed evenly in the population but that, rather, certain individuals are more prone to such events (Breslau et al. 1995; Poulton and Andrews 1992). A previous report from the present study has shown higher levels of distress among crime victims compared to non-victims even prior to the victimisation experience (Denkers and Winkel 1997a). Together, these findings may suggest that risky or self-defeating behaviours on the part of victims contribute to the occurrence of the event. An alternative explanation, the one suggested by the first model, is that disadvantage in terms of SEI is inevitably associated with high risk for negative events and with low satisfaction with life. The model suggests that controlling for SEI will diminish the relationship of prior life stress and of satisfaction with life with subsequent victimisation risk.

The second model suggests that both victimisation and disadvantage in terms of SEI are directly related to high distress. These hypotheses are based on established findings from the respective body of literature, namely on the effects of criminal victimisation on distress (e.g. Kilpatrick et al. 1987, 1989) and on the effects of SEI on psychological distress (Kohn et al. 1998). The model also suggests that the effect of victimisation on distress is modified by SEI. Specifically, those persons who are disadvantaged in terms of SEI are expected to be more vulnerable to the deleterious effects of victimisation on distress than those who are advantaged in terms of SEI (e.g. Langner and Michael 1963). To the best of our knowledge, the model was never specifically tested for the event of criminal victimisation.

The model proposed here goes a step further. Following the analyses of Mcleod and Kessler (1990), the lack of two types of resources – social support and resilience – potentially constitutes the vulnerability of persons who are disadvantaged in terms of SEI. Based on past research, resilience is specified here in terms of style of information processing (Kreitler and Kreitler 1988), locus of control (Rotter 1966), need for affiliation (Hill 1987, 1991), and hardiness (Kobasa 1979; Kobasa et al. 1982).

The information required in order to test these hy-

potheses includes follow-up data of a general population sample in which incident cases of victimisation occur. Furthermore, baseline information, hence prior to the experience of victimisation, about vulnerability is required. Needless to say, the collection of such a true prospective database is a costly and time-consuming endeavour, since baseline information needs to be collected about a large number of respondents in order to end up with a large enough sample of victims. The strength of this study is the availability of such a unique data set.

Subjects and methods

■ Participants

A prospective cohort study was designed. Data were collected from an existing nationwide sample of the Dutch population that was recruited between September 1992 and December 1994 using random-digit dialling by Telepanel, an organisation linked to the University of Amsterdam. Respondents were offered a personal computer and a modem in exchange for participation, which included filling out questionnaires at any time during the weekends. The questionnaires were sent from a central computer via the modem and, once filled out, returned the same way. Altogether 5169 respondents were recruited during the study period. The distribution of the sample was almost identical (at the most a 1–2% difference) to that of the total Dutch population with respect to gender, age, marital status, and degree of urbanisation. Baseline measures were taken of all participants. A total of 3446 (67%) respondents had complete data on the variables included in the first model.

Respondents were subsequently screened, once a week, for incidence of criminal victimisation. Those who answered in the affirmative to the general screening question were further probed by a list of crime labels (household burglary, contact robbery, threat, assault, or sex-related crime). Respondents who could assign themselves to one of those crime types were presented with a series of questions concerning the nature of the crime. Social support and distress were also measured at this time (T1). Altogether 253 victims were identified and questioned.

Every 4 months a new group of participants was selected for the comparison group out of the remaining non-victimised participants. Participants in the comparison group were selected so as to match the existing group of victims on gender, age, and marital status. They were asked to fill out the same questionnaires as the victims at T1. Altogether 296 persons were selected for the comparison group.

In the following months, both victims and persons from the comparison group filled out the distress questionnaire once a month. Here we report the results for the first 3 months following victimisation or recruitment into the comparison group. Hence, T1 indicates the first measurement after victimisation or upon recruitment to the comparison group, while T2 through T4 indicate the monthly follow-up in the following 3 months. The first 3 months seem most interesting in terms of comparability to the DSM-IV definition of chronic PTSD. At T1, 179 (71%) of the victims and 266 (90%) of the participants from the comparison group had data on the relevant variables for our analyses. At the time of the 3-month follow-up, 119 victims (47%) and 210 persons from the comparison group (71%) remained in the sample and have valid data. Attrition after 3 months became substantial. Even though these drop-out rates are high, a comparison between responders who remained in the study and those who dropped out at or before 3 months indicates that the two groups are not significantly different with respect to gender, age, educational level, social class or distress at first measurement.

■ Measures

Baseline measures

Two types of *SEI measure* were taken at baseline. SES was measured in terms of education as the type of school last attended. The types of school were later collapsed into three categories, with elementary school, special education, and technical high school categorised as low-level education; high school as medium; and university and other post high school education categorised as high level of education.

The data collected did not allow a full social class classification, but a mere distinction between self-employed, employees, and various categories of persons who are outside the paid labour force such as unemployed, students, home-makers, and pensioners.

The *Satisfaction With Life scale* (Diener 1984) was used to assess well-being at baseline. The scale consists of five items that are scored on a seven-point rating scale (e.g. "My life is in most respects ideal"). It is considered a general measure of well-being, with good psychometric properties. Respondents with high scores on the scale were found to be well adjusted and free from psychopathology (Diener et al. 1985). The Dutch translation by Heesink (1989) appeared to be reliable in this study (Cronbach's $\alpha = 0.85$).

Prior life stress (Winkel 1989) was measured with four items in which respondents were asked to evaluate the previous year regarding social, financial, health and general aspects of their lives, on a seven-point scale ranging from very negative (low scores) to very positive (high scores). The reliability of this scale as measured by Cronbach's α was 0.65.

Style of information processing was assessed using a scale that was developed for this particular study (Denkers and Winkel 1997b; Winkel and Steinmetz 1990), based on the work of Kreitler and Kreitler (1988). The scale, including seven items each with a seven-point scale, purports to measure a tendency for an anxious and emotional style of information processing as opposed to a cognitive one (e.g. "I often react emotionally"). Cronbach's α for the scale was 0.66.

Locus of control was measured with a Dutch version (den Hertog 1992) of Rotter's (1966) scale. This scale, including 18 items, is named the "IE-18" (e.g. "If you really try hard, then you can achieve a lot"). Cronbach's α for the scale was 0.76.

Hardiness was measured with five items that were developed based on the work of Kobasa (1979). Since the translation of the original items proved unreliable in a pilot study, a new scale, including five items, measuring challenge was developed (e.g. "I can work well under stress"). All items were scored on a seven-point scale ranging from "totally agree" to "totally disagree". Cronbach's α for this scale was 0.77.

Need for affiliation was assessed with a Dutch translation of three items from Hill's (1987) interpersonal orientation list (e.g. "In difficult times I find most comfort in other people"). Cronbach's α for the scale was 0.78.

Follow-up measures

Several measures were taken following recruitment into victim or comparison group.

Distress. The outcome variable in this study is a well-being measure. Erdman (1981), using factor analysis, derived this scale from the Medical Psychological Health Questionnaire (MPQ). The eight items of this scale proved to form the most prominent factor of the MPQ in terms of the amount of variance explained. The scale has been frequently used in research focusing on the effects of stressful life events. It assesses the respondents' psychological and physical distress at the moment of filling out the questionnaire. Examples are "at the moment I am feeling unhappy/happy" and "unsafe/safe". Cronbach's α for the scale was 0.95.

Social support with respect to the crime event was measured among victims during the week following victimisation. Support was assessed for each of three categories of potential support providers: partner, close social network (friends, family, and neighbours), and distant social network (i.e. club, church, and authority). In addition, the availability of four types of support was evaluated: emotional, information, acceptance, and practical support. For each of these elements, needed and received support were assessed on seven-point

rating scales. Two scales were constructed, one for needed support (Cronbach's $\alpha = 0.84$) and one for received support (Cronbach's $\alpha = 0.78$).

Results

Table 1 presents demographic characteristics of the initial sample and the sample of victims and participants in the comparison group. It indicates that there are no substantial differences between victims and the comparison group in terms of gender, education, or social class [for gender: $\chi^2(1) = 0.09$, NS; for education: $\chi^2(2) = 1.12$, NS; for social class: $\chi^2(5) = 7.82$, NS]. There is also no significant difference in terms of gender between victims and participants in the comparison group on the one hand and the original general population sample on the other [$\chi^2(1) = 0.15$, NS]. However, there are significant differences in terms of education [$\chi^2(2) = 56.46$, $P < 0.000$], with victims and participants in the comparison group having attained a higher level of education compared to the original sample. In addition, there are significant differences in terms of social class [$\chi^2(5) = 19.53$, $P < 0.002$], with victims and participants in the comparison group containing a lower proportion of housewives and a higher proportion of unemployed.

■ The relationship of SEI with criminal victimisation (the first model)

The analyses for the first model utilised the initial general population sample. Hence, 3446 respondents were included who had complete data on the variables included in this model. Since the dependent variable is a

dichotomous variable [victimisation (yes/no)], logistic regression was used.

The first model suggests that SEI is directly associated with victimisation risk and in addition confounds the relationship of prior life stress and satisfaction with life with victimisation risk. Table 2 presents the relationship of the two SEI measures with victimisation risk, prior life stress, and satisfaction with life. Part A presents the relationship with social class; part B with education.

A clear relationship is apparent between social class and victimisation, with the unemployed showing a higher rate (11%) compared to all other classes combined (6%). This difference is statistically significant [$\chi^2(1) = 13.16$; $P < 0.001$]. A closer inspection of the relationship according to type of victimisation (results not shown) indicates that the higher rate of victimisation experienced by the unemployed is due to higher rates of more severe crimes (i.e. robbery, threat) rather than to property crimes. Furthermore, unemployed men and women alike experience higher rates of victimisation.

The relationship of social class with prior life stress and satisfaction with life is also in the expected direction. Hence, the unemployed have a significantly lower score on prior life stress, indicating negative evaluation of the previous year, compared with the combined score of all the other classes [$F(1,3445) = 128.10$, $P < 0.001$]. Likewise, the unemployed have a significantly lower score on satisfaction with life (indicating less satisfaction) compared with the combined score of all the other classes [$F(1,3445) = 125.93$, $P < 0.001$].

Part B of Table 2 shows the relationship with educa-

Table 1 Demographic characteristics of the different samples used in this study

	General population sample (<i>n</i> =3446)	Victims (<i>n</i> =119)	Comparison group (<i>n</i> =210)
<i>Gender</i>			
Women	1627 (47 %)	53 (44 %)	90 (43 %)
Men	1819 (53 %)	66 (56 %)	120 (57 %)
<i>Education</i>			
Low	1452 (42 %)	37 (31 %)	55 (26 %)
Middle	974 (28 %)	30 (25 %)	52 (25 %)
High	1020 (30 %)	52 (44 %)	103 (49 %)
<i>Social class</i>			
Employee	1706 (50 %)	54 (46 %)	107 (51 %)
Self-employed	116 (3 %)	6 (5 %)	5 (3 %)
Student	304 (9 %)	11 (9 %)	28 (13 %)
Housewife	761 (22 %)	20 (17 %)	28 (13 %)
Pensioner	319 (9 %)	11 (9 %)	26 (12 %)
Unemployed	240 (7 %)	17 (14 %)	16 (8 %)
<i>Type of Crime</i>			
Burglary		42 (35 %)	
Robbery		31 (26 %)	
Threat		26 (22 %)	
Assault		12 (10 %)	
Sexually-oriented crime		8 (7 %)	

Table 2 The relationship of two socio-economic inequality (SEI) measures (A social class and B education) with victimisation risk, prior life stress, and satisfaction with life

SEI	Victimisation	Prior life stress ^a	Satisfaction with life
<i>A. Social class</i>			
Employees (<i>n</i> =1706)	6 %	5.27	5.12
Self-employed (<i>n</i> =116)	7 %	5.16	5.40
Student (<i>n</i> =304)	6 %	5.18	5.04
Housewife (<i>n</i> =761)	3 %	5.11	5.21
Pensioner (<i>n</i> =319)	6 %	5.12	5.16
All classes combined (except unemployed)	6 %	5.20	5.15
Unemployed (<i>n</i> =240)	11 %	4.50	4.30
<i>B. Education</i>			
Low (<i>n</i> =1452)	4 %	5.11	5.07
Middle (<i>n</i> =974)	6 %	5.22	5.10
High (<i>n</i> =1020)	8 %	5.15	5.10

^a Lower scores on prior life stress indicate negative evaluation of the previous year

tion. Unexpectedly, the victimisation rate increases with higher education. Even though the differences are not large, this relationship is significant [$\chi^2(2) = 18.34, P < 0.001$]. The direction of the association between education and victimisation remains the same when specific types of crime are considered separately and when the relationship is observed among men and women separately. There is no relationship of education either with prior life stress or with satisfaction with life. Hence, education cannot be considered a potential confounder of the relationship between prior life stress and victimisation or between satisfaction with life and victimisation. Therefore, the confounding hypothesis of the first model is tested only for social class and, specifically, for the distinction of unemployed versus all other class categories.

In a logistic regression equation in which victimisation is the dependent variable, the prediction of the model is that once unemployment is entered into the equation, the effect of respectively prior life stress or satisfaction with life on victimisation will disappear. Part A of Table 3, presenting the results of these analyses for prior life stress, indicates that the magnitude of the odds ratio (OR) of prior life stress remains relatively unchanged after controlling for the effect of unemployment. Similar results are presented for satisfaction with life in part B of Table 3. Hence, the confounding hypothesis of the first model is not supported by these results.

SEI as a modifier of the relationship between victimisation and distress (the second model)

In the analyses of the second model, only victims and respondents from the comparison group were used. Three steps were followed in testing this model. First, the long-term effect of victimisation on distress was analysed with repeated measures ANOVA. Second, longitudinal analyses examined to what extent education and em-

ployment status influenced distress at the first four measurement points following victimisation, and how this differed for victims and the comparison group. This was tested among 119 victims and 210 participants in the comparison group, with complete data at all four measurements using structural equation modelling. The third step examined the extent to which vulnerability factors, i.e. hardiness, style of information processing, locus of control, and need for affiliation, could explain effects of education and employment status on distress on the first measurement point following victimisation. This was examined among 179 victims and 266 participants in the comparison group with data at T1. In both analyses with structural equation modelling, education (low, medium, high), and employment status (unemployed, other status) were the major predictors of distress (continuous variable). In these models, we tested whether the statistical effects of education and employment status were similar in both groups (victims and comparison participants). Because education is an ordinal variable, and employment status a dichotomy, the data were first analysed with PRELIS 2 (Jöreskog and Sörbom 1996), and next a matrix with polychoric correlations was analysed with LISREL 8.12 (Jöreskog and Sörbom 1994). However, because the samples were too small to reliably estimate asymptotic covariances, the model was estimated using maximum likelihood rather than weighted least square estimation (Jöreskog and Sörbom 1989)¹.

Difference between victims and the comparison group

Fig. 1 presents the mean distress scores of victims and participants in the comparison group over time. It shows that at 1 week following victimisation, victims experienced higher distress compared to the comparison group and that the difference in distress became smaller over time. Repeated measures ANOVA indicate that the overall difference between victims and the comparison group is significant [$F(1,327) = 4.36, P < 0.05$]; that the effect of time is significant [$F(3,981) = 3.71, P < 0.01$]; and that there is no significant interaction between the effect of victimisation and time [$F(3,981) = 1.28, NS$].

Table 3 Results of logistic regression analyses in which the effect of prior life stress^a (A) and of satisfaction with life (B) on victimisation is controlled for the effect of unemployment

	OR	95 % CI	Wald statistic	Significance
A				
<i>Regression equation 1:</i>				
Prior life stress	0.75	0.65–0.87	15.42	0.001
<i>Regression equation 2:</i>				
Prior life stress	0.78	0.68–0.91	10.92	0.001
+ unemployment	1.35	1.08–1.69	7.19	0.01
B				
<i>Regression equation 1:</i>				
Satisfaction with life	0.81	0.72–0.91	12.98	0.001
<i>Regression equation 2:</i>				
Satisfaction with life	0.84	0.74–0.94	8.72	0.01
+ unemployment	1.36	1.09–1.70	7.58	0.01

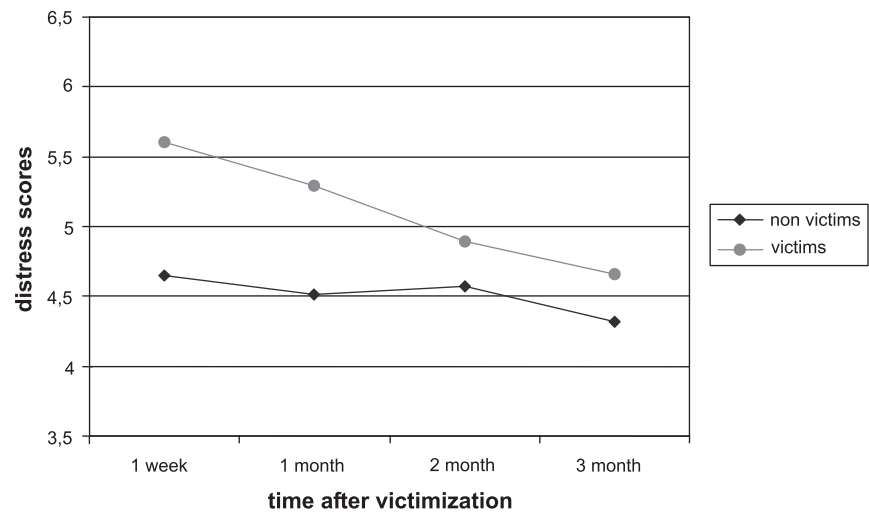
^a Since lower scores on prior life stress indicate negative evaluation of the previous year, an OR that is lower than 1 indicates that negative evaluation is associated with high victimisation risk

Longitudinal relationship of education and employment status with distress among victims and the comparison group

Preliminary analyses in PRELIS on the longitudinal data showed that the univariate distributions of the distress measures at the four measurement points deviated from

¹ It is generally not considered correct to use equality constraints (between victims and comparison participants) when analyzing a correlation matrix in LISREL. Therefore, we repeated our analyses using a covariance matrix estimated by PRELIS. The results were virtually identical to those reported below. We report the analyses with polychoric correlations because they better reflect the ordinal nature of our data.

Fig. 1 Distress scores according to victimisation status



a normal distribution. Among both victims and participants in the comparison group, these measures were highly positively skewed (skewness varied between 0.86 and 1.38 among victims, and between 1.19 and 1.50 among the comparison group), showing that most victims and participants in the comparison group were low in distress, with a few participants in the comparison group and somewhat more victims high in distress. In addition, especially among the comparison participants, most distress measures had a high kurtosis (fat tails), with more persons scoring low or high than would be expected on the basis of the mean and variance of the distributions. These deviations of normality further justified the use of polychoric correlations in estimating the model. This matrix is shown in Table 4.

Table 4 Polychoric correlations between education, employment status, and distress for victims (above the diagonal, $n = 119$) and comparison participants (below the diagonal, $n = 210$)

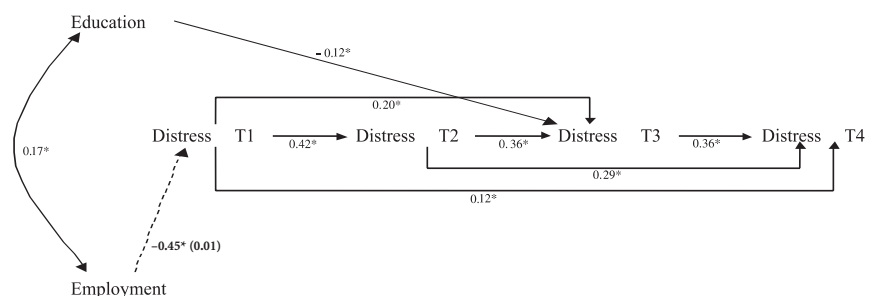
	1	2	3	4	5	6
1 Education		0.20*	-0.08	-0.15	-0.09	-0.12
2 Employment status	0.16*		-0.46**	-0.36**	-0.28**	-0.37**
3 Distress T1	-0.03	0.01		0.35**	0.47**	0.35**
4 Distress T2	-0.07	0.08	0.47**		0.54**	0.61**
5 Distress T3	-0.20**	0.04	0.29**	0.40**		0.51**
6 Distress T4	-0.08	0.00	0.41**	0.47**	0.56**	

* $P < 0.05$

** $P < 0.01$, two-sided

The polychoric correlation matrix of the longitudinal data for the 119 victims and 210 comparison participants was analysed using LISREL. In this model (see Fig. 2), education and employment status were the exogenous variables that could freely influence distress at all four measurements, and the correlation between education and employment was set free as well. Moreover, the paths from a distress measure to subsequent measures of distress were all set free. The parameters in this saturated model were forced to be identical in both groups (victims and comparison participants). This resulted in a model with a reasonable fit [$\chi^2(21) = 49.46$, $P < 0.001$, GFI = 0.98, NFI = 0.88, NNFI = 0.89, RMSEA = 0.065]. However, this fit could be substantially improved by relaxing the equality constraint for the path of employment status to distress at T1 [$\Delta\chi^2(1) = 17.44$, $P < 0.001$]. The fit of the resulting model was good [$\chi^2(20) = 32.02$, $P < 0.05$, GFI = 0.98, NFI = 0.92, NNFI = 0.95, RMSEA = 0.043], and the model could not be substantially improved by relaxing more equality constraints. Fig. 2 shows this model, with all significant paths. As can be seen, there was a significant relationship between employment status and education. Unemployed (0) were somewhat lower in education than the other classes combined (1). Moreover, unemployed victims were higher in distress at T1 than victims of other classes ($\gamma = -0.45$), which was not true for unemployed from the comparison group ($\gamma = 0.01$), and those higher in education experienced less distress at T3 in both groups.

Fig. 2 Results of LISREL model testing the relationship between two socio-economic inequality (SEI) measures (education and employment status) and distress among victims ($n = 119$) and comparison participants ($n = 210$) over four measurement points (* $P < 0.05$). (Coefficients for the comparison group are indicated in parentheses when they are different from those of victims, the path in such cases is indicated by a dotted line)



Finally, it can be seen that distress was substantially related to distress at subsequent measurements. Due to its effect on distress at T1, employment status had significant indirect ($-0.19 < \gamma < -0.16$, $P < 0.001$) and total ($-0.23 < \gamma < -0.15$, $P < 0.01$) effects on distress at the other three measurements, showing that unemployed victims remained higher in distress over time than victims of other classes.

Hence, this analysis indicates that employment status modified the effect of victimisation on distress, with persons who are unemployed more vulnerable to the effect of victimisation. This interaction effect was found most strongly directly following victimisation.

The role of mediating factors

To further explore the nature of this effect, the role of potentially mediating vulnerability factors was examined in a second LISREL model, with distress at T1 as the primary dependent variable (see Fig. 3)². This was done to avoid the loss of a substantial portion of the sample due to missing values at the second through the fourth measurement points following victimisation. Preliminary

2 The role of social support as vulnerability factor can be tested only among victims (as it was only measured among victims following a victimization experience). The analysis indicated that employment status (1=employed, 0=unemployed) had an extremely low association with social support: $r = 0.04$ (NS) with needed support and $r = 0.05$ (NS) with received support. Therefore, social support cannot be considered a mediator between employment status and distress.

analyses with PRELIS showed that the four continuous vulnerability factors were approximately normally distributed among both victims and comparison participants, although hardiness was somewhat negatively skewed among victims (-0.39 , $P < 0.05$), and need for affiliation had a negative kurtosis (thin tails) among both groups (-0.60 and -0.67 , $P < 0.05$). Because education and employment status are ordinal variables, again polychoric correlations were analysed. These correlations are shown in Table 5.

The polychoric correlations of the mediational model for 179 victims and 266 comparison participants were analysed with LISREL. In this model, education and employment status were the exogenous variables that could freely influence distress at T1 and the four vulnerability factors, i.e. style of information processing, locus of control, need for affiliation and hardiness. Moreover, the correlation between education and employment, and the correlations between all four vulnerability factors were set free. Finally, all the paths from the vulnerability factors to distress were set free. The parameters in this saturated model were again forced to be identical in both groups (victims and comparison participants). This resulted in a model with an unsatisfactory fit [$\chi^2(28) = 67.32$, $P < 0.001$, GFI = 0.98, NFI = 0.83, NNFI = 0.83, RMSEA = 0.056]. However, this fit could be substantially improved by relaxing the equality constraint of the path from employment status to distress at T1 [$\Delta\chi^2(1) = 16.88$, $P < 0.001$], and could be further improved by relaxing the constraint of the path from employment status to style of information processing [$\Delta\chi^2$

Fig. 3 Results of LISREL model testing the mediation role of four vulnerability factors in the relationship between two SEI measures (education and employment status) and distress among victims ($n = 179$) and comparison participants ($n = 266$) at T1 (* $P < 0.05$). (Coefficients for the comparison group are indicated in parentheses when they are different from those of victims, the path in such cases is indicated by a dotted line)

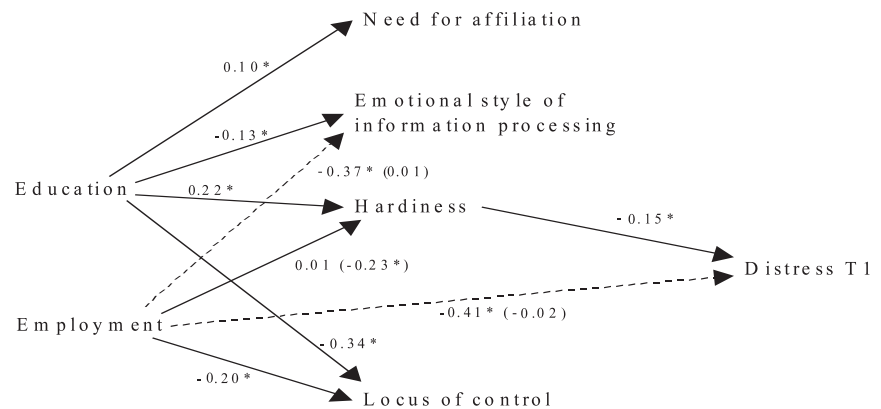


Table 5 Polychoric correlations between education, employment status, vulnerability factors and distress at T1 for victims (above the diagonal, $n = 179$), and comparison participants (below the diagonal, $n = 266$)

	1	2	3	4	5	6	7
1 Education		0.33**	-0.19*	-0.38**	0.08	0.16*	-0.12
2 Employment status	0.12		-0.42**	-0.32**	-0.05	0.10	-0.45**
3 Info processing ^a	-0.17**	0.00		0.25**	0.20**	-0.40**	0.20**
4 Locus of control ^b	-0.38**	-0.24**	0.18**		0.11	-0.30**	0.20*
5 Need for affiliation	0.11	0.07	0.16**	-0.10		-0.16*	-0.05
6 Hardiness	0.24**	-0.21**	-0.31**	-0.32**	-0.17**		-0.25**
7 Distress T1	-0.05	0.00	0.16**	0.10	-0.02	-0.13*	

^a Higher scores reflect a more emotional style of information processing

^b Higher scores reflect a more external locus of control

* $p < 0.05$; ** $p < 0.01$, two-sided

(1) = 12.01, $P < 0.001$], and to hardiness [$\Delta\chi^2(1) = 7.28$, $P < 0.01$]. The fit of the resulting model was good ($\Delta\chi^2(25) = 31.15$, NS, GFI = 0.99, NFI = 0.92, NNFI = 0.97, RMSEA = 0.024], and the model could not be substantially improved by relaxing more equality constraints.

Fig. 3 shows this model, with all significant paths, but without the significant residualised correlations (ϕ and ψ). As in the previous model, the correlation between education and employment status was significant ($\phi = 0.20$, $P < 0.01$). Moreover, all residualised correlations between the vulnerability factors, except the correlation between locus of control and need for affiliation ($\psi = 0.02$, NS) were significant, and similar in sign as those in Table 5.

As can be seen in Fig. 3, unemployed victims had more distress at T1 than victims of other classes ($\gamma = -0.41$), which was not true for unemployed comparison participants ($\gamma = -0.02$). These paths indicate the direct effects of employment status on distress. Of the vulnerability factors, only hardiness significantly contributed to lower distress. The paths of employment status to hardiness differed for victims and the comparison participants. Among victims there was no difference in hardiness between the unemployed and the other classes. The group of unemployed in the comparison group was relatively high in hardiness compared to the other classes combined. Similarly, the paths of employment status to style of information processing differed for victims and the comparison participants. Among victims the unemployed were relatively high on emotional style of information processing compared to all other classes, while there was no difference in style of information processing between the unemployed and the other classes in the comparison group. Since all vulnerability measures were ascertained prior to victimisation, these differences cannot be due to victimisation. Altogether, the indirect effect of employment status on distress was not significant for victims ($\gamma = -0.03$, NS) or non-victims ($\gamma = 0.03$, NS).

The path of education to hardiness was similar among victims and comparison participants. Those higher in education were higher in hardiness. Due to its relation with hardiness, education had a significant indirect effect on distress ($\gamma = -0.06$, $P < 0.01$)³.

Discussion

This paper presented two theoretical models concerning the role of SEI in the occurrence of victimisation and in

the consequent ensuing distress. Both models received partial support. Results from testing the first model indicated that disadvantage in terms of social class (measured in terms of unemployment) increases the risk of criminal victimisation. However, the relationship of SES (measured in terms of education) with victimisation risk is in the opposite direction to that of class. Hence, persons with a higher level of education run a higher risk of being victimised compared to persons with a lower education. As already indicated, this is an unexpected result, which could not be explained in terms of confounding by gender, age, or an association of high education with unemployment. The type of crime offered no explanation either, as all types were more common among persons with higher education. The hypothesis that SEI is responsible for an apparent relationship of satisfaction-with-life and prior-life-stress with subsequent victimisation was not supported.

The second model, suggesting that disadvantage in terms of SEI increases vulnerability to distress among crime victims was supported, again, for employment status but not for education. This study did not identify any specific psychological vulnerability factor that can explain this phenomenon.

Two conceptually different measures of SEI were used in this study: social class and SES. Those hypothesised relationships that were confirmed applied to social class but not to SES, indicating that it does indeed make a difference which theoretical construct of SEI is adopted. Similar to the findings of Wohlfarth and van den Brink (1998) with respect to the role of SEI in substance use disorders, our results demonstrate that different types of SEI measures lead to different conclusions about the role of SEI in criminal victimisation. In summary, this study indicated that unemployment increases the risk for criminal victimisation as well as the level of distress in the face of such victimisation. A study of this same issue that would have included only an SES measure, specifically only an education-based measure, might have led to the (erroneous) conclusion that social disadvantage does not confer a higher risk for being victimised nor for the psychological distress that often follows such an experience.

Our results with respect to victimisation risk are at variance with those of Byrne et al. (1999). In a longitudinal study similar to ours, they found no association of employment status with subsequent victimisation, although they did find an association between having attained an educational level below that of one's mother or female caregiver and subsequent victimisation. The latter being an indication of a relationship between downward social mobility with victimisation risk rather of a relationship between disadvantaged SEI and victimisation risk. The difference between the two studies may be due to the types of crime studied. Ours includes only a minority of sexually oriented crimes (7%) whereas in the Byrne et al. (1999) study the majority of crimes were sexually related. Perhaps social class does not confer a higher risk for exposure to this type of crimes, although,

3 It might be argued that other variables, such as gender or age, should be controlled when considering the effects of employment status and education. Additional LISREL analyses in which gender and age were included as exogenous variables with free paths to all other variables in the model did not substantially modify these models. In the longitudinal model (Fig. 2), all significant paths remained significant and of approximately similar size; in the mediational model (Fig. 3), only the path from education to style of information processing failed to reach significance.

as the Byrne et al. (1999) study shows, these crimes can have detrimental socio-economic consequences.

Some limitations of this study should be kept in mind while drawing conclusions from it. For one, this study relies completely on self-report and therefore suffers from all the methodological problems that are associated with this form of data collection. For example, a low threshold for reporting problems may falsely increase the association between victimisation and distress. Perhaps more importantly, the reliability of some of the psychological measures used in this study was not strong. This could have resulted in attenuation of some of the relationships and hence to the failure to support some of the hypotheses that were posed.

Some limitations are associated with the SEI measures used in this study. The social class measure does not tap all the dimensions necessary for a complete social class classification, and therefore allows only for a crude classification into employers and employees and several categories of persons who are outside the labour force. More specific information concerning control over budget decisions, over labour power or about autonomy in the work process, may reveal new or stronger associations. Nevertheless, the important association with unemployment was revealed even with this crude social class measure. Most SES measures do not distinguish the unemployed as a separate category and therefore would not have revealed this relationship.

The SES measure used in this study, namely education, confers another weakness of this study. Specifically, in a multigenerational sample such as ours, the differences between educational levels may be confounded by generational differences in educational attainment.

In order to be better able to contrast the conclusions drawn from employing social class with those drawn from employing SES measures of SEI, future studies should employ a more complete social class questionnaire and additional SES measures besides education.

A final limitation is associated with the nature of our sample. The most commonly endorsed crime among the sample of our victims was burglary (35%), while only few (15%) became victims of severe crimes like assault and sexual crimes. One may doubt whether the conclusions drawn from these relatively 'mild' traumas can be generalised to victims of more severe traumas. Therefore, future studies should try to replicate these results with victims of more severe traumas.

Bearing these limitations in mind, one can turn now to the conclusions and implications that can be derived from this study. The results obtained from testing model 1 demonstrate empirically the structural influence of disadvantaged social standing. Rather than attributing victimisation to individually determined risky behaviours, our results suggest that victimisation occurs with a higher likelihood in a social group that is characterised as disadvantaged. Fox and Shewry (1988), reporting findings from the OPCS longitudinal study, show that unemployment is associated with a higher risk of moving from self-owned housing to local authority accom-

modation. These neighbourhoods are likely to have higher crime rates.

One might contest this interpretation on the grounds that becoming and staying unemployed is attributable to individual characteristics that may be associated with tendencies to engage in behaviours that increase the risk of becoming victimised. Caspi et al. (1998) indicate that unemployment is predictable from early childhood and youth characteristics, among which is antisocial behaviour. Kasl et al. (1998) have dealt with the issue of selection versus causation in the relationship between unemployment and health and distress in a review of the literature on this subject. They conclude that both processes operate in causing this relationship. Specifically, both social selection and social causation operate to create the relationship between unemployment and behavioural and lifestyle risk factors.

The implication from this body of evidence is that special attention in terms of crime prevention should be paid to disadvantaged neighbourhoods, specifically those with high unemployment rates. Special attention could consist, for example, of advice from the police concerning locks for the front door, as well as provisions for more surveillance by the police in such areas.

The results obtained from testing model 2, showing an increased vulnerability of the unemployed to psychological distress in the face of victimisation, could be due to low self-esteem that may have resulted from unemployment. Conversely, employment may confer positive protective benefits, for example by providing social support from colleagues, that is lacking in the case of the unemployed. In either case (vulnerability of the unemployed or employment as a protective factor), our results point to the group of unemployed as worthy of special attention and support from aid organisations such as victim assistance. Victim assistance organisations could incorporate unemployment as part of a profile describing victims who are at high risk for distress following victimisation. Victims who are identified as being at high risk could then be monitored carefully in order to identify early those in need of support.

Although different speculations may be invoked to explain the mechanism that renders the group of unemployed more vulnerable than other groups to the psychological effects of victimisation and perhaps of other stressful events, this issue remains unresolved. In line with Link and Phelan (1995), we tend to see unemployment as a social condition, which constitutes a "fundamental cause" of disease. According to these authors, fundamental causes of diseases are factors associated with social conditions such as social class that in turn determine access to resources that affect multiple disease outcomes. The challenge now is in deciphering the nature of the process leading from social condition to vulnerability. More generally, the issue is to clarify the nature of the relationship between broad sociological structure, such as socio-economic factors, and intra-personal psychological characteristics, such as vulnerability to stress, and the mechanism by which sociologi-

cal processes become translated into psychological ones.

However, more important than the intellectual challenge is the one for policy makers. This study points out that unemployment, in addition to being an economic hazard, is a hazard for safety and psychological well-being as well.

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